Updates I030744-001

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From: McMillin, Stella@Wildlife
To: Marline Azevedo; Fought, Meghan@Wildlife; Palmer-Townsend, Marilyn@CDPR; Kratville, David@CDFA; Miller, Robert
Subject: Loss report for skunks and raccoons in Stanislaus County
Date: Monday, April 23, 2018 4:19:29 PM
Attachments: P3276.pdf

Hello all, I have attached a loss report for skunks and raccoons in Stanislaus County. Please contact me if you have any questions.

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Lab Number P-3276
Necropsy Z18-0051-0054
CAHFS Numbers D1802174, D1801978, D1801449

Date of loss: January 29, 2018
Samples:
Striped skunk *Mephitis mephitis*
Raccoon *Procyon lotor*
Protection status: No special status

To: Marline Azevedo
Stanislaus County Deputy Agricultural Commissioner

Report Date: April 20, 2018

Remarks
Unusual anticoagulant rodenticide exposure in wildlife near Delta Mendota Canal. -001

Background
On January 23, 2018, a number of dead skunks and raccoons found near the Delta Mendota Canal in Crows Landing were reported to the Stanislaus County Agricultural Commissioner's Office. When staff visited the site the next day, 22 raccoon, 12 skunk, 1 opossum, and 1 rat carcass were found in close proximity to each other along the Delta Mendota Canal and near agricultural land (nut orchards and field crops). The close proximity of carcasses of different species does not support the cause of death as being disease. Two skunks, 2 raccoons and the rat were submitted to the Wildlife Investigations Laboratory (WIL) for analysis.

RESULTS OF EXAMINATION

Necropsies on the carcasses were performed at WIL on January 25, 2018. The carcasses were too degraded to determine cause of death but no fractures or foreign bodies were found. Initially, liver and adipose tissues were submitted from the freshest skunk to the California Animal Health and Food Safety Laboratory (CAHFS) to test for anticoagulant rodenticides, bromethalin, and strychnine. Stomach contents were submitted from a raccoon to test for zinc and aluminum phosphide. No strychnine, bromethalin, or zinc and aluminum phosphide were detected. In the skunk liver sample, 4 anticoagulant rodenticides were detected: 0.440 brodifacoum, 0.280 ppm difethialone, and traces of bromadiolone and difenacoum (Table 1). All four of these are second generation anticoagulant rodenticides, California restricted materials used for commensal rodents. Signs of intoxication have been found when anticoagulant rodenticide liver concentrations are above 0.1-0.2 ppm (Thomas et al 2011). Brodifacoum and difethialone were present in concentrations that could have caused intoxication. However, it is not possible to determine if intoxication was the cause of death because the carcasses were too degraded to show signs of coagulopathy. Two more raccoon livers and one more skunk liver were submitted to CAHFS for anticoagulant rodenticide analysis. Anticoagulant rodenticides were detected in all 3 liver samples, but the same compounds were not consistently detected in each sample (Table 1). Finally, the brain tissue of a skunk from the site was tested for cholinesterase and which was found to be within

normal range, indicating that cholinesterase suppression from organophosphate and carbamate pesticides had not occurred.

Table 1. Anticoagulant rodenticides detected in carcasses from January 23 incident.

Carcass	Brodifacoum	Bromadiolone	Difethialone	Difenacoum	Chlorophacinone	Diphacinone	Warfarin
Skunk	0.44	Trace	0.28	Trace	ND	ND	ND
Skunk	Trace	ND	ND	ND	ND	ND	ND
Raccoon	1.7	ND	ND	ND	ND	0.18	ND
Raccoon	Trace	0.061	ND	ND	ND	ND	ND

While it is not possible to determine whether anticoagulant rodenticide intoxication was the cause of death for any of these animals, the high concentrations of brodifacoum in two animals and difethialone in one animal indicates there was likely a misuse of these materials in the vicinity.

References:

Thomas, P.J., P. Mineau, R.F. Shore, L. Champoux, P.A. Martin, L.K. Wilson, G. Fitzgerald, and J.E. Elliot. 2011. Second generation anticoagulant rodenticides in predatory birds: Probabilistic characterization of toxic liver concentrations and implications for predatory bird populations in Canada. Environment International 37: 914-920.

WILDLIFE INVESTIGATIONS LABORATORY

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